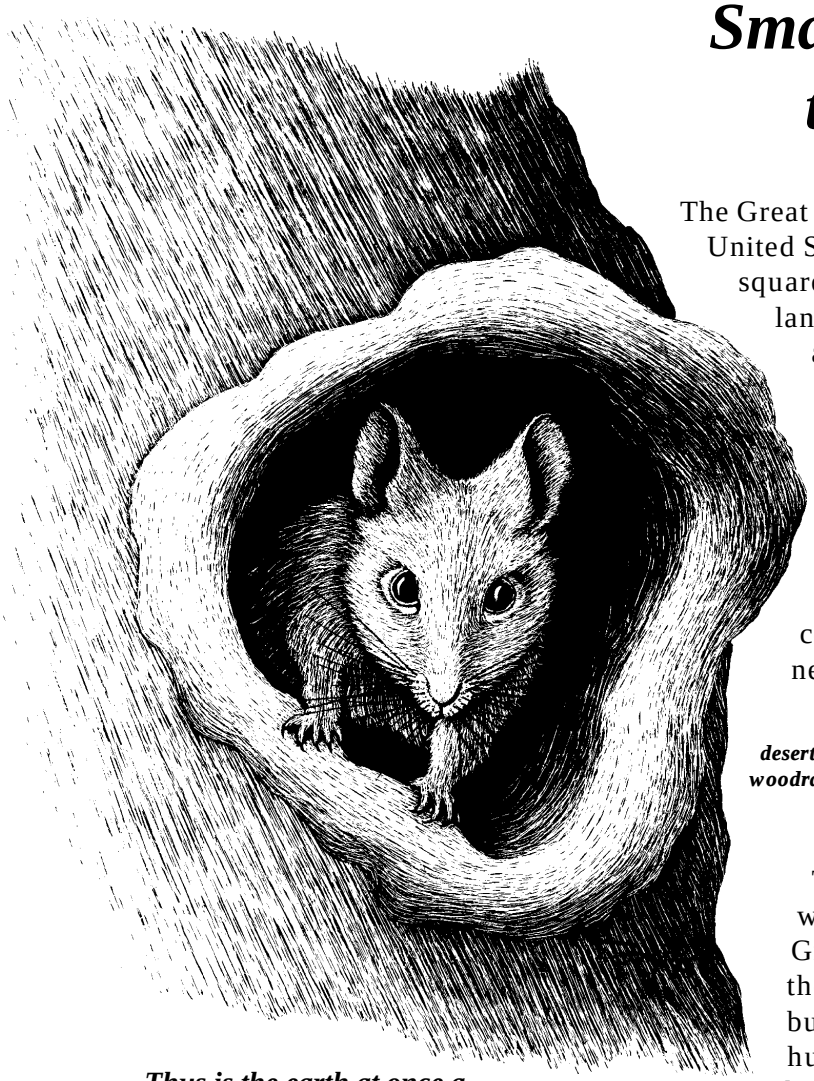
Growing WILD

Fall 1995 *Utah's Project WILD Newsletter*

Small Wonders of the Great Basin



desert woodrat

The Great Basin Desert is the largest desert in the United States, occupying approximately 160,000 square miles. Despite its expansiveness, this landscape is poorly understood and rarely appreciated by most people.

Over the last 8,000 years the wild plants and animals of this region have been forced to adapt to a gradual temperature increase and an accompanying drop in precipitation. Parallel strings of mountain ranges crossing the Great Basin Desert contribute to colder winters than in any of the neighboring deserts. Although these high mountains seem to suggest a land within reach of water, the Sierras to the west prevent the moisture of the Pacific winds from ever reaching this area.

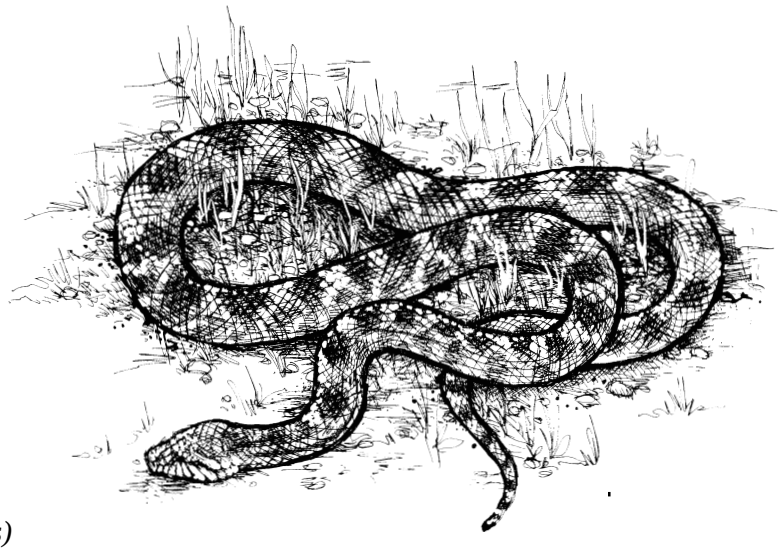
Thus is the earth at once a desert and a paradise.
- Antoine de Saint Exupery -

These climatic conditions have produced life with many unique adaptations. For example, Great Basin spadefoot toads protect themselves from dryness and heat by burrowing into the ground, reappearing by the hundreds after a rain to "snore" and mate in shallow pools of water. The desert woodrat makes its home in abandoned burrows and hollow stumps, fortifying the entrances with sticks and cactus spines. Consuming bark, seeds, and any available green plant, its presence is often evident only by the ominous rattlesnake-like sound of its tail shaking defensively among the dry leaves.

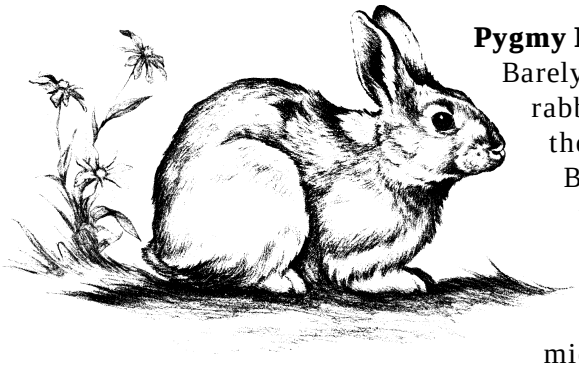
Far from a land devoid of life, the Great Basin Desert is a land rich in diversity. For everyone along the Wasatch front and over 50% of Utah's population, it is our home. This edition of Growing WILD *is dedicated to exploring the unique adaptations of the Great Basin Desert plants and animals. It also includes a variety of teaching resources available through the Project WILD office.*

Living with Limits

..the desert, the dry and sunlashed desert, is a good school in which to observe the cleverness and the infinite variety of techniques of survival under pitiless opposition. Life could not change the sun, or water the desert, so it changed itself...The desert has mothered magic things.
- John Steinbeck -



Great Basin Gopher Snake: *(Pituophis melanoleucus)*
To be successful in its desert habitat, the Great Basin gopher snake is a diurnal hunter, preying upon small mammals and rodents as they sleep together in their burrows. It has developed the special ability to constrict several prey at once, allowing it to pass one or two animals to holding coils, preventing their escape, while gripping its first prey in its jaws. Since it is slow-moving and cannot chase small rodents, this is the only way the snake is assured of getting a full meal. In the west, its habitat is primarily grassland and open brushland. Because this snake is not well adapted for concealment or fleeing when threatened, its primary defensive strategy is to assume a hostile posture, flatten its head, vibrate its tail and hiss loudly. Unfortunately, this habit, along with its markings (a light tan color with diamond shaped blotches on its back and sides), often results in this nonvenomous snake being mistaken for a rattlesnake and killed.



Pygmy Rabbit: *(Sylvilagus idahoensis)*
Barely 12 inches long at its largest, the pygmy rabbit is the smallest rabbit in North America. Its distribution is limited almost entirely to the Intermountain West. Big sagebrush, predominant in the Great Basin, serves as this rabbit's most important food. The strong sage flavor it gives to the pygmy rabbit also seems to make this rabbit a less desirable game species for many hunters. Although a crepuscular feeder, eating mainly at dawn and dusk, the pygmy rabbit has been known to feed right on top of sagebrush in the middle of the day.

Mormon Cricket: *(Anabrus simplex)*

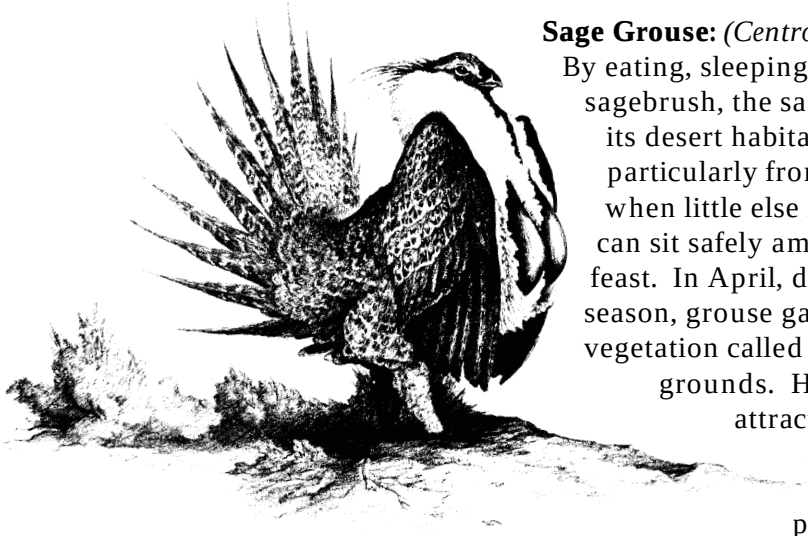
The most famous of Great Basin invertebrates, the mormon cricket actually lives in a variety of habitats extending from extreme western Minnesota to the east side of the Sierra Nevada and Cascades, north to southern Canada and south to the boundary of the Great Basin in the west. Dark brown to bluish black in color and 1-2 3/8 inches in length, this cricket makes hoarse chirping sounds that are repeated at intervals. It deposits its eggs below the soil surface in midsummer where they overwinter, hatching in the spring to release up to 100 nymphs. This cricket received its common name in 1848, after thousands attacked the first crops of Mormon pioneers.

Great Basin Spadefoot Toad: *(Scaphiopus intermontanus)*

Like most toads, the Great Basin spadefoot depends upon water to moisten its skin, protect its eggs and nourish its young. Unlike other toads, the spadefoot has the ability to dig down into the cool moist earth below the desert floor. It possesses "spades," moon-shaped pieces of skin and bone on its hind feet. Spending the day buried under the surface of the earth, it comes out once the sun has set, to hop

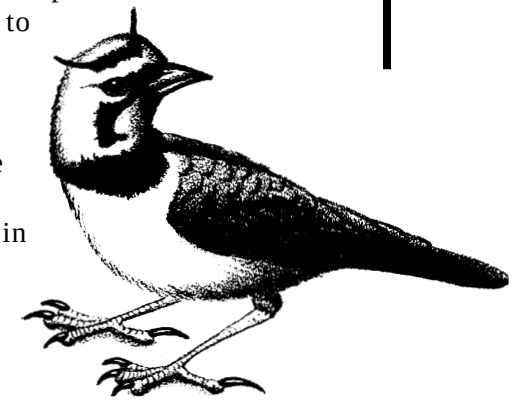
among the sagebrush, catching insects with its long, sticky tongue. On rainy nights, awakened by the thumping of rain drops overhead, these toads come out of the ground by the hundreds to look for shallow pools of water. Within these temporary pools, they lay their eggs. In two days the eggs become tiny, wiggling tadpoles, and within only two more weeks (faster than most frogs), these tadpoles become adults. They have little time before the desert sun dries up their water and they risk death.

Gray Fox: *(Urocyon cinereoargenteus)*
In a land where food is scarce the gray fox is well adapted to making use of what is available. Found in the southern part of Utah's Great Basin Desert, the gray fox is the only North American canid with genuine climbing abilities. It can climb 50 feet up a limbless tree trunk. Jumping from limb to limb, the gray fox uses trees for foraging and as refuge areas from predators. Fruit obtained from trees and shrubs serves as the fox's principle food in the fall and winter. Fox also consume pocket gophers, mice and carrion. When berries and fruits dry up toward summer, the fox switches its diet to insects. Just as the fox is a predator, it is also prey. Fox are preyed upon by golden eagles, coyotes, bobcats and humans.



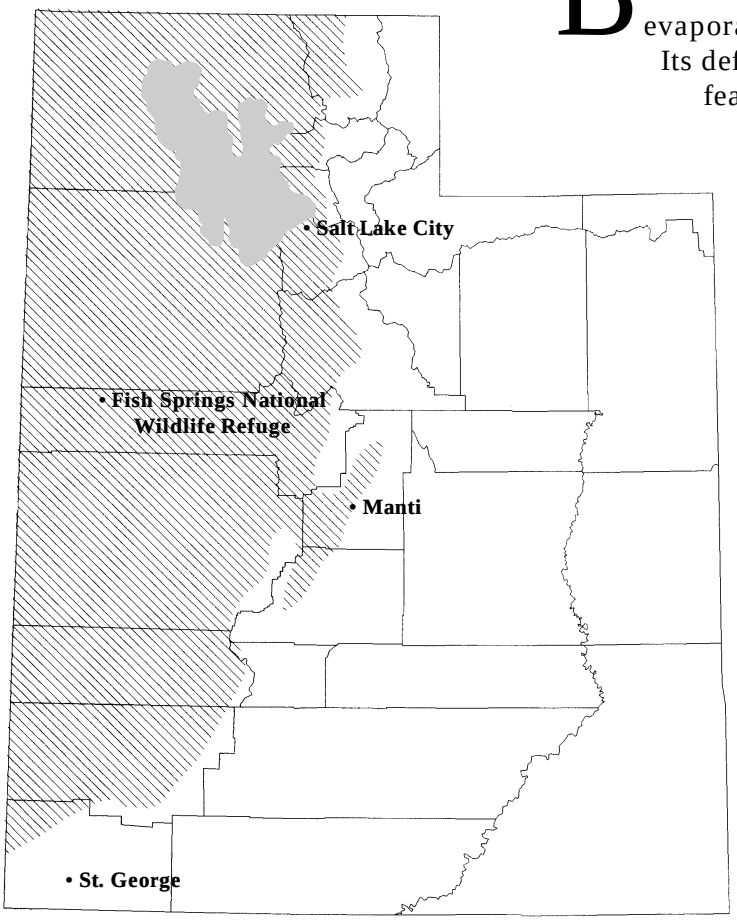
Sage Grouse: *(Centrocercus urophasianus)*
By eating, sleeping and nesting among the sagebrush, the sage grouse makes full use of its desert habitat. Throughout the year, but particularly from October through April, when little else is edible, the sage grouse can sit safely among the sagebrush and feast. In April, during the breeding season, grouse gather in areas with little vegetation called "leks" or courtship grounds. Here the males strut and display in hopes of attracting a mate. They fan their tail feathers and inflate their chest sacs with over a gallon of air. The air sacs deflate to fill two bare patches of olive yellow skin on the chest. These patches then collapse with a sharp pop. “Lekking” in large groups has evolved as a protective response to the openness of the desert. Surrounding itself with other birds reduces a single grouse's chance of being eaten. Once as many as four hundred males gathered to vie for female attention; now twelve is average. Over 80% of female sage grouse establish nests within a 2-mile radius of a lek, making this area the most important habitat to sage grouse.

Horned Lark: *(Eremophila alpestris)*
Horned larks are widespread throughout North America. Common to the open country, the lark has developed erratic and unpredictable flight patterns to avoid being captured by kestrels and marsh hawks. It will take to flight quickly and then close its wings after only a few quick beats, making its body fall and dip in the air. Distinctive for its black “horns,” white or yellowish face, broad black eye stripe, and black bib, the lark is often the first songbird to begin nesting in the spring. It builds its nest on the ground in grass tufts long before the snow is gone. Larks live primarily in grasslands and can be found in large flocks throughout the year.



Ecosystems

Defining A Desert



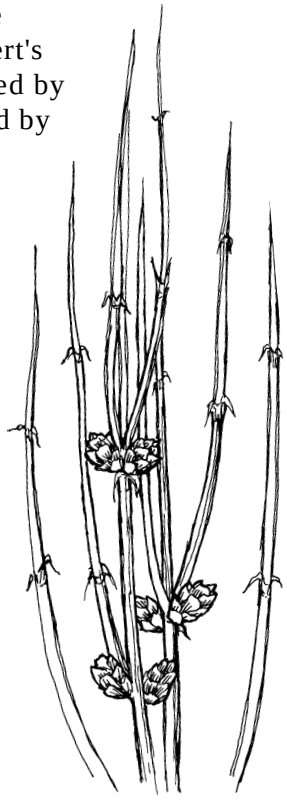
Shaded area represents Utah's Great Basin Desert

By definition the Great Basin Desert is an area that receives less than 10" of rain annually or has an evaporation rate that exceeds the rate of precipitation. Its definition does not end here. A series of other features combine to make the Great Basin Desert distinct from the Mojave, Chihuahuan, and Sonoran deserts. The Great Basin is a temperate desert with cold, snowy winters and hot, dry summers. Its valleys are dominated by sagebrush and shadscale. It spans an area of isolated mountain ranges sitting in the shadow of the Pacific mountain system. The Pacific mountains to the west literally drain the wind currents of their moisture before they ever reach the Great Basin.

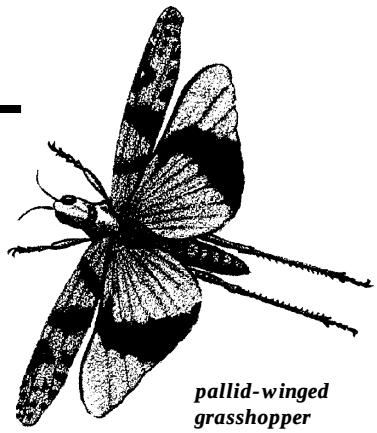
Cordilleras, chains of mountains, form the structural and biological boundaries that define this region. It is bordered on the west by the Sierra Nevada and on the east by the Wasatch range of central Utah and the high plateaus of the Colorado Plateau. The desert's southern boundary is defined by the biological border formed by the northern frontier of creosote plants.

The Great Basin is dry and its climate is unpredictable and susceptible to huge fluctuations. It receives 60% of its precipitation as snow, during a time of year when most plants are dormant. The majority of the remaining precipitation arrives in summer and runs off in flash floods, much too quickly for plants to utilize. In some places, solar radiation is so great that evaporation exceeds precipitation by eight times.

Life depends upon water. It is through the creative capacities of plants and animals to capture and hold the meager desert moisture that the patterns of the Great Basin Desert communities have formed. They are unique, dynamic and complex, and testify to the amazing abilities of organisms to adapt.



Mormon tea



pallid-winged grasshopper

Field Trip

An Educational Oasis

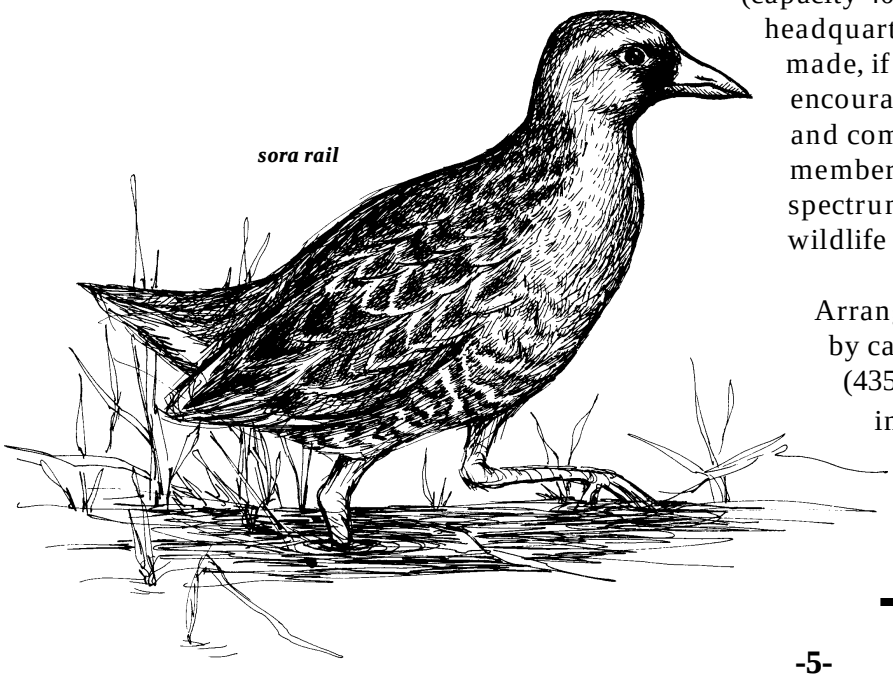
Not all of the Great Basin Desert is dry. At the southern end of the Great Salt Lake Desert, tucked along the eastern front of the Fish Springs Mountains, 104 miles southwest of Tooele, five major springs pump water into an 18,000 acre wildlife refuge. Fish Springs National Wildlife Refuge is home to four types of plant communities, hundreds of species of waterfowl and shorebirds, a variety of songbirds, numerous raptors, and many mammals. Established in 1959 as a waterfowl resting and nesting area along the Pacific Flyway, it holds ample opportunities for private citizens and school groups to conduct in-depth studies in wetland and wildlife ecology.

The refuge is composed of 6,000 acres of desert uplands, occupied by greasewood, shadscale and saltgrass. These gently rolling uplands give way to approximately 2,000 acres of mud and alkali flats and 10,000 acres of saline marsh.

The marsh areas are critical habitat for thousands of migrating and breeding birds. Fall migrating waterfowl populations reach their peak in September and October and average 21,000 birds. Spring migration peaks in April. Throughout the year, however, the refuge serves as an oasis to a wide variety of other wildlife.

It is used by Great Basin Canada geese, tundra swans, herons, ibises, avocets, phalaropes, and many other shorebirds. Marsh hawks and golden eagles are year-round residents, while bald eagles and kestrels are numerous during the winter. Coyotes, muskrats, cottontails, mule deer, and badgers, along with many small rodents, are present among the marsh grasses and in the upland shrubs. And there are three species of fish which occur in the refuge, as well as eight species of bats.

Refuge staff can provide tours and class presentations on wildlife or wetland ecology tailored to your particular class needs or areas of interest. Facilities include a large picnic area (capacity 40-45), public restrooms and refuge headquarters. Camping arrangements can be made, if necessary. Pre-field trip visits are encouraged to allow teachers to explore the area and communicate their specific needs to staff members. This is a prime place to study a broad spectrum of habitats and many species of wildlife in the Great Basin Desert.



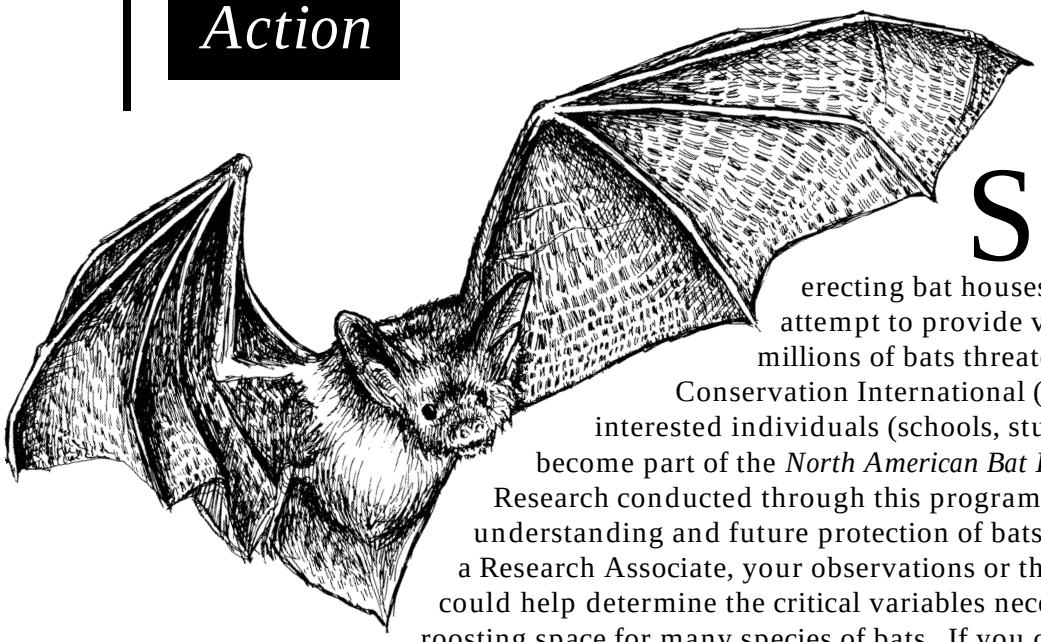
sora rail

Arrangements to visit the refuge can be made by calling the refuge manager, Jay Banta, at (435) 831-5353, or by writing to him for information:

Fish Springs National Wildlife Refuge
P.O. Box 568
Dugway, UT 84022

Action

Roost Boost!



pallid bat

Since the early 1980s private citizens, schools, and communities have been erecting bat houses throughout America in an attempt to provide valuable roosting space to millions of bats threatened by habitat loss. Bat Conservation International (BCI) is currently seeking interested individuals (schools, students, citizens, etc.) to become part of the *North American Bat House Research Project.* Research conducted through this program will contribute to greater understanding and future protection of bats. By volunteering to become a Research Associate, your observations or the observations of your class could help determine the critical variables necessary to providing suitable roosting space for many species of bats. If you or your class elect to become a Research Associate, you will receive:

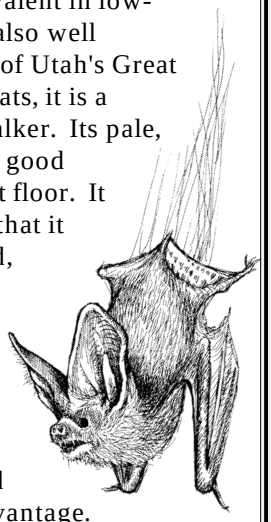
- *The Bat House Builder's Handbook*, information on constructing and erecting a bat house in your backyard, schoolyard, park, forested area, etc.
- *The Bat House Researcher*, a biannual newsletter
- Instructions and data forms to assist you in conducting experiments
- Opportunities to exchange ideas with other project participants
- Chances to compete for grants and awards
- A personalized *BCI Research Associate* certificate upon completion of research

If you are already a BCI member, you can join the Research Project with a $10 donation. Nonmembers can sign up to become Research Associates without joining BCI by making a $15 donation, or they can become BCI members and join the project by donating $40.

To contact BCI and find out more about the *North American Bat House Research Project*, write or call:

Bat Conservation International
P. O. Box 162603
Austin, TX 78716-2603
(800) 538-BATS

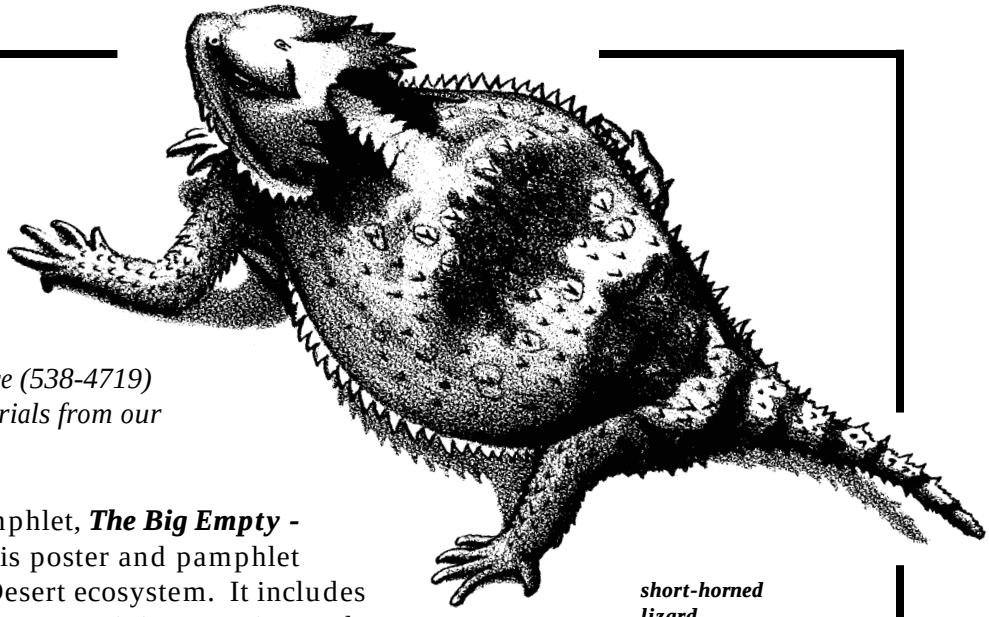
Pallid Bat
(*Antrozous pallidus*)



The pallid bat is most prevalent in low-elevation deserts and is also well adapted to the southern part of Utah's Great Basin Desert. Unlike many bats, it is a ground feeder and a good walker. Its pale, light yellowish-brown coat is good camouflage against the desert floor. It lives mainly on large insects that it catches on or near the ground, including everything from scorpions and crickets to cicadas and praying mantids. Its diet also includes agave flowers and the fruits and seeds of desert cacti. Unfortunately "ground feeding" is not always an advantage. As it crawls across the desert floor, the pallid bat is susceptible to injury and predation. The membranes of its wings can become ripped and its skin speckled with the spines of desert plants. It is also within easy reach of one of its common predators, snakes. As with many bats, it relies upon echolocation, sight, and a well-developed sense of smell to avoid such dangers. If caught it emits a skunk-like odor in an attempt to deter its attacker.

Resources

Utah's Great Basin Desert



short-horned lizard

Contact the Project WILD office (538-4719) to check out the following materials from our Desert Resource File:

•**Free Poster** and 8-page pamphlet, ***The Big Empty -*** Colorful and informative, this poster and pamphlet focuses on the Great Basin Desert ecosystem. It includes discussions of water management, mining, grazing and tourism, as well as suggestions for classroom activities.

• ***Great Basin Desert Curriculum -*** For teachers in grades K-12, this curriculum focuses on geography, geology, cave exploration, bats, desert adaptations of plants and animals, and human history. It also includes extensive background information, activities and lists of resources.

• **Great Basin Workshop,** June 18-21, in Baker, NV - Sponsored by the Great Basin National Park, more information about this workshop can be obtained by calling Nancy Hadlock, the education outreach coordinator at (702) 234-7331.

• ***Beating the Heat -*** A special issue of Natural History, Vol. 102, No. 8, August 1993; this issue presents over fifteen articles on how living organisms survive and even thrive in the heat.

• ***Utah's Amphibians and Reptiles -*** This pamphlet is composed of brief descriptions of Utah's 83 species of amphibians and reptiles.

• ***Discovering Deserts,*** NatureScope, National Wildlife Federation - An elementary activity guide.

• **Plants and Animals List -** Flora and fauna of Utah's Great Basin and Mojave deserts.

• ***Utah Reptiles -*** An article by Jim Glenn (reprints available).

• ***Desert Voices*** and ***The Desert is Theirs -*** Elementary level stories by Byrd Baylor.

• **OBIS activities -** *Desert Hunt, Cactus Wheel, Night Eyes, Desert Water Keepers,* and *Leapin' Lizards.*

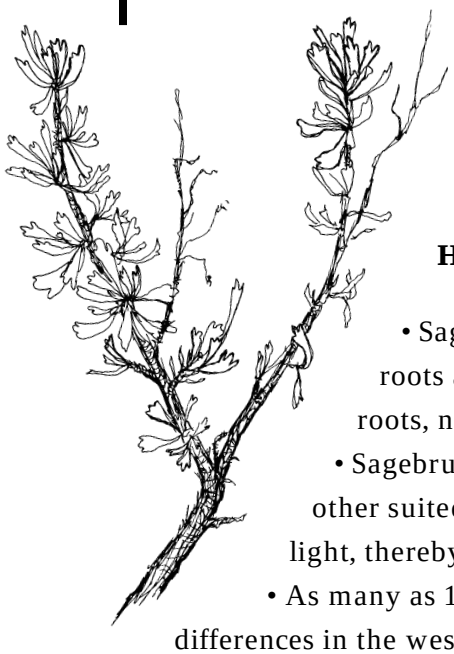
• **Cactus Desert -** This video focuses on desert communities with a close look at diurnal and nocturnal animals. 10 min. Grades K-6

Short-horned lizard
(Phrynosoma douglassi)

The short-horned lizard is found primarily in the Great Basin Desert, but ranges from S. British Columbia to Mexico. Living most often in rocky or sandy plains, it is a diurnal animal, hunting most actively during the midday heat. It feeds primarily on ants. At night it will burrow into the soil for cover. Breeding season is from July through August. Litters of from 6 to 31 live offspring are common.

WILD Index

Sage Secrets



The Great Basin Desert's endless vistas are broken only by intermittent waves of gray-green sagebrush and have often been referred to as the "sagebrush ocean." Sagebrush communities blanket 45% of the Great Basin. In some areas sage composes over 70% of the plant cover and 90% of the biomass.

How does it survive?

• Sagebrush has evolved a way to tap the desert's scarce water supply. Its roots are often 3 times the diameter of its crown, and within the span of these roots, no other plants can grow because all of the water has been used.

• Sagebrush has evolved two different leaf types, one for dry periods and the other suited for periods of precipitation. The gray-green color of its leaves reflects light, thereby decreasing transpiration (loss of water through the leaves).

• As many as 12 species of sage have evolved to take advantage of minute climatic differences in the western deserts. Many of these species also have distinct subspecies.

What eats it?

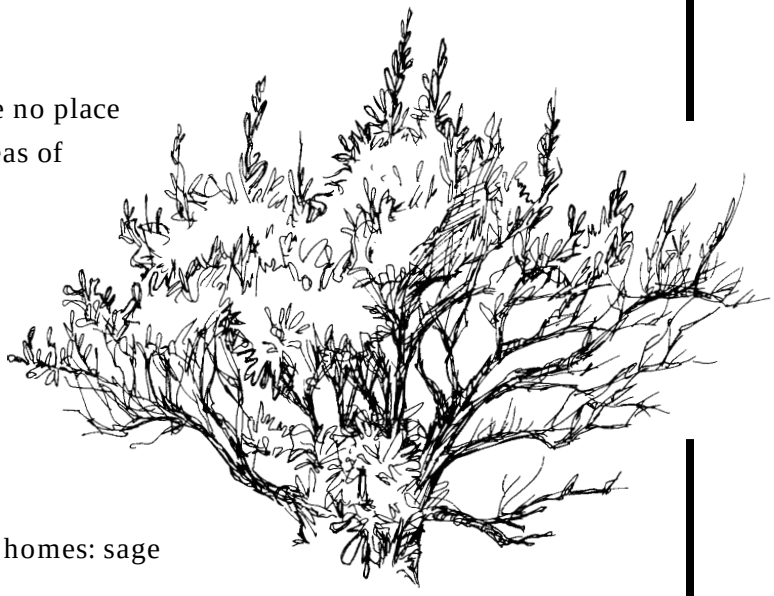
• Sage is a valuable source of food for several animals and is one of the few plants available year round, especially in the winter, when snow covers most other foods. It matches alfalfa in protein content and surpasses it for carbohydrates and fats.

• Sage grouse survive entirely on sage leaves from October - April.

• During the bitter winter, mule deer nibble the sage that also protects them from severe winds.

• It is the pronghorns' only source of food in winter. They often eat up to 5 1/2 lbs of it a day!

What uses it for shelter?



• Without sagebrush, sage grouse would have no place to live. They will only build their nests in areas of 20-40% canopy cover.

• Pygmy rabbits live in areas dominated by sagebrush. Each entrance of their extensive burrow system is located at the base of a sage plant.

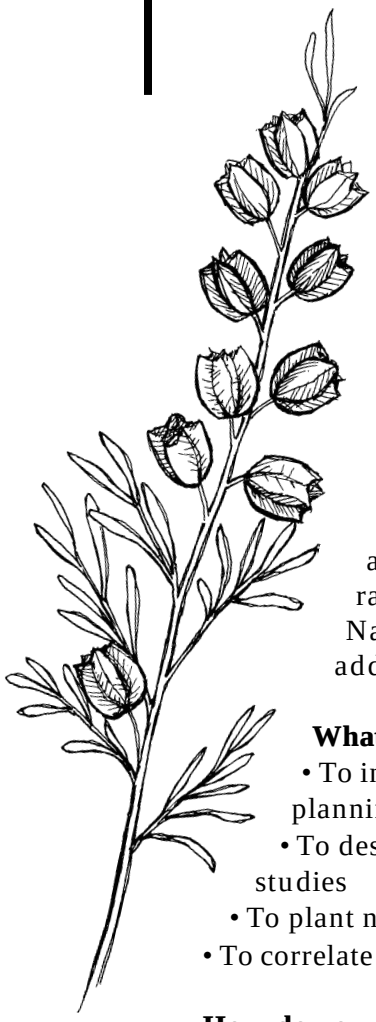
• Mule deer and pronghorns use sagebrush in the spring to protect their young from predators.

• Many other animals use sagebrush for their homes: sage thrasher, sage sparrow, sagebrush lizard, etc.

Action

School Yard Naturescaping Grants

Win a $300 student action grant from Project WILD for the 1995-1996 school year!



saltbush

What is a Naturescaping Grant?
It is an action project designed by students to establish wildlife habitat on or near their school grounds.

Why does it focus on habitat?
Providing habitat for wildlife is of increasing importance. Naturescaping projects allow students to take positive actions which will result in long-term benefits for wildlife.

Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has. -Margaret Mead-

How large a project does it have to be?
It can be as simple as planting native plants for birds and butterflies or as extensive as revegetating winter range for big game animals. Many schools use the Naturescaping Grant as "seed" money and solicit additional funding from community and school sources.

What should the emphases be?

- To involve students in the project planning and implementation
- To design areas for interdisciplinary studies
- To plant native species
- To correlate the project to state core curricula

How do you apply?

- Request an application from Project WILD, Utah Division of Wildlife Resources, 1596 West North Temple, Salt Lake City, UT 84116. You will also receive the booklet *Creating Landscapes for Wildlife* (a guide to Utah's vegetative zones and native plants).

- Complete the application form and return it to the Project WILD office by ***November 27, 1995.***

Utah's Project WILD is able to fund Naturescaping projects due to a grant from the National Project WILD Program, the Phillips Petroleum Foundation, and the National Fish and Wildlife Foundation.

Toyota/TAPESTRY Grants

Project WILD is not the only source of funding for science and environmental education projects. Additional grants are available to K-12 teachers through Toyota and the National Science Teachers Association (NSTA). Forty grants are available this year and up to $400,000 in grant money will be awarded. All proposals must be received at NSTA headquarters no later than *January 23, 1996.* To receive an application kit and a list of the winning projects from 1995, call (800) 807-9852, or write to: Toyota TAPESTRY Grants, 1840 Wilson Blvd., Arlington, VA 22201-3000.

Resources

New Videos!

These videos are available for check-out from the Project WILD office. Call 538-4719 to make arrangements.

Black-footed Ferrets: An Endangered Species Comes Home - This excellent overview of the endangered black-footed ferret recovery program includes a discussion of the ferret's life history and interrelationships with other species of the prairie. 12.5 min. Grades 4-12

The Colorado: Secrets at the Source - An inspiring view of the wildlife and habitat found along the wild upper stretches of the Colorado River, this program is excellent for looking closely at forest and mountain ecosystems. 24 min. Grades 4-12

The Return of the Bison - This comprehensive video examines the historical plight of the bison, its successful comeback to the Great Plains and its life history. 24 min. Grades 7-12

Rocky Mountain High: Wildlife of the Alpine Tundra - Superb for learning about the alpine tundra ecosystem, this video examines the lives of wild animals living in harsh environments like Utah's Uinta Mountains. 25 min. Grades 4-12

Insects, Fish, Amphibians, Birds and **Reptiles** - These five exceptional and dynamic videos feature the natural history, adaptations and ecological interactions of these species, as well as an examination of their historical and cultural significance. Each video: 30 min. Grades 4-12

Paperview: News About the Paper We Use - A news program hosted by two young broadcasters, this is an entertaining and informative video that discusses the three "Rs" of paper use: reducing, reusing and recycling. 9 min. Grades K-6

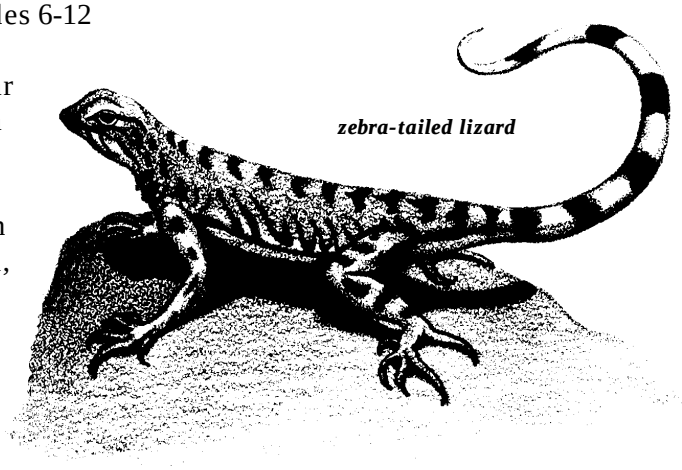
Wildlife in Danger - This video presents some of the current problems facing wildlife: habitat destruction, pollution, and the selling of rare wildlife products. It describes efforts currently underway to save some of our threatened and endangered species. 30 min. Grades K-12

Hawk, Grizzly Bear, Wolf, Bats, and **Snake** - These five videos feature some of nature's most fascinating predators! Produced by Time Life, the excellent photography and narration create informative and interesting portrayals of these amazing animals. 52 min. Grades 6-12

Wolf: Return of a Legend - This video examines one of nature's most misunderstood animals. Remarkable close-up footage allows the viewer to gain a better understanding of wolves and the issues surrounding their continued existence. 50 min. Grades 6-12

Cougar: Ghost of the Rockies - Secrets of the elusive cougar are revealed in this video that tracks the two-year study of a female cougar in the wilds of Idaho. 50 min. Grades 6-12

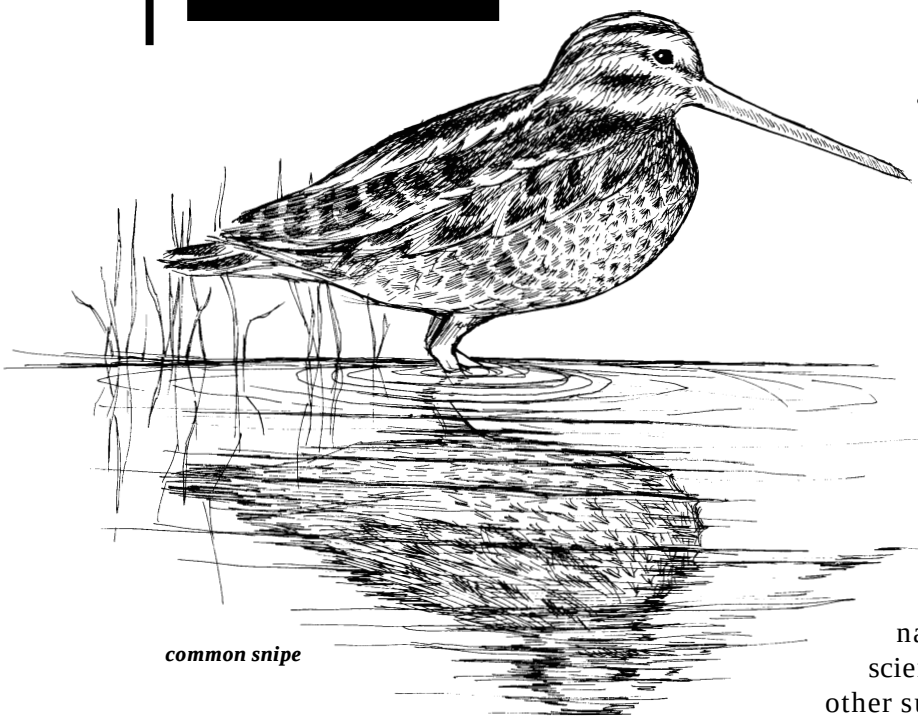
Realm of the Serpent - This exotic video adventure gives an exciting close-up look at some of the world's most maligned, misunderstood, and intriguing creatures, snakes! 50 min. Grades 6-12



zebra-tailed lizard

Resources

Looking For More?



common snipe

• **Free Poster:** ***Ecosystems: In Your Backyard, In Your World -*** An attractive poster depicting the complexity of interactions within a backyard ecosystem. It includes activities focusing on the maintenance of ecosystems. Call Project WILD for a copy, (801) 538-4719.

• ***Exploring School Nature Areas -*** A 13-minute video developed by Project WILD to inform teachers how to take action for wildlife. It demonstrates how schools can create nature areas and use them to teach science, social studies, math, art, and other subjects. Call the Project WILD office to check out the video, (801) 538-4719.

• ***WILD School Sites: A Guide to Preparing for Habitat Improvement Projects on School Grounds -*** Produced by Project WILD, this guide includes ideas for WILD school site habitat improvement projects. It outlines the steps for planning and developing a WILD site and includes activities which can be used in coordination with your site development. Cost is $3. Call Project WILD to order your copy, (801) 538-4719.

• ***Taking Action: An Educator's Guide to Involving Students in Environmental Action Projects*** This booklet provides a broad overview for getting students involved in environmental action projects. It includes summaries of 30 "success stories" (everything from protecting and developing habitats, to planning community gardens, creating publications and developing seminars). It also includes lists of national student organizations, fund-raising programs and other resources to help incorporate student action into your teaching. Cost is $3. Call Project WILD to order your copy, (801) 538-4719.

• **1996 Albert Schweitzer Environmental Youth Award -** Do you know someone, age 12-18, who has initiated an environmental awareness or action project? You can nominate him/her for this youth award. Five hundred dollars will be awarded to an individual or group of students who have made a positive environmental change within their community. The application deadline is *March 1, 1996.* For information, contact The Albert Schweitzer Institute for Humanities, P.O. Box 550, Wallingford, CT 06492-0550.

• **Four Corners Regional Bat Conference,** January 25-27 - Sponsored by the Colorado Bat Society, this conference will bring together researchers, educators and managers to discuss conservation education and management of bats in the Four Corners area. For information call Dr. Cheri Jones at (303) 370-6354.

project WILD®

Utah Division of Wildlife Resources
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Growing WILD **was written by Sarah Twombly, Bob Ellis and Diana Vos. Pallid bat, gopher snake, spadefoot toad, gray fox, rail, snipe and all plants drawn by Jill Rensel. Woodrat, horned lark, grasshopper, zebra-tailed lizard, and short-horned lizard drawn by Doug Moore.**

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